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Mr. William F. Caton, Acting Secretary  
Federal Communications Commission  
Room 222  
1919 M Street NW  
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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

**Re: Rules and Policies for Local Multipoint Distribution Service  
and for Fixed Satellite Services, CC Docket No. 92-297**

Dear Mr. Caton:

On behalf of Sierra Digital Communications, Inc. ("Sierra"), this is a reply to the ex parte letters of Texas Instruments ("TI") filed in this docket on September 16, 1996 ("TI Letter"), and of CellularVision USA, Inc. filed on September 18, 1996 ("CellularVision Letter"). I am filing the original and one copy of this letter pursuant to Section 1.1206(a)(1) of the Commission's Rules.

TI's letter for the most part reiterates matters that are not in dispute, fails to provide factual or legal support for matters that are in dispute, and in some cases mischaracterizes issues before the Commission. CellularVision's letter merely restates arguments CellularVision has already made in this proceeding.

Sierra supports a resolution of the 31 GHz controversy that splits the band evenly: a 150 MHz primary allocation to LMDS in the middle of the band, and two 75 MHz blocks at either edge of the band that continue to be available for point-to-point use with no change to the present rules. This allocation both meets LMDS's documented spectrum needs and preserves point-to-point operations in the public interest.

#### **Unprotected Status of 31 GHz Point-to-Point Operations**

Sierra does not dispute that current 31 GHz operations are unprotected. Nor does Sierra attempt to convert those operations from secondary to protected, as TI alleges, or convert them to a de facto primary basis, as CellularVision

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alleges.<sup>1/</sup> Both parties mistake the meanings of the terms. A secondary operation is one that must accept harmful interference from, and may not cause harmful interference to, a primary service authorized in the same band. If the Commission ultimately authorizes LMDS at 31 GHz -- as Sierra has encouraged it to do, in the middle half of the band -- there is no question that point-to-point operations must yield to LMDS if harmful interference occurs in either direction. Thus, Sierra does not seek any rights for 31 GHz users beyond the very limited rights they have now. To the contrary, Sierra supports restricting those rights to half the presently available bandwidth.

In short, the question in dispute does not concern the relative operating rights of primary and secondary users. The question, rather, is whether the Commission must consider the public interest in unprotected point-to-point 31 GHz operations in deciding whether to authorize LMDS as a primary service in the band in the first instance. The U.S. Court of Appeals for the D.C. Circuit has answered that question in the affirmative.<sup>2/</sup> In view of this precedent, the unprotected nature of current 31 GHz operations cannot itself constitute a ground on which the Commission can allocate the band to another service.

## **Undocumented Need for LMDS Spectrum Greater Than 1000 MHz**

TI resists Sierra's assertions that the record in this proceeding fails to support an allocation greater than 1,000 MHz to an LMDS operator. Yet, from "three and a half years of study and thousands of pages of comments,"<sup>3/</sup> TI can cite only one document (other than the present Notice) in its favor. That is a long-abandoned 1993 proposal that contemplated two LMDS providers per market, each using 1 GHz.<sup>4/</sup> The idea ultimately failed for want of spectrum. And, until the present Notice, there has been nothing in the record to suggest that one LMDS operator needs more than 1,000 MHz to provide a viable service.

The Commission has long sought a full 1,000 MHz for LMDS. Ultimately it was able to allocate only 850 MHz of unencumbered spectrum at 28 GHz, with

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<sup>1/</sup> TI Letter at 2; CellularVision Letter at 3.

<sup>2/</sup> H&B Communications Corp. v. FCC, 420 F.2d 638, 642 (D.C. Cir. 1969).

<sup>3/</sup> TI Letter at 3.

<sup>4/</sup> TI Letter at 2-3.

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another 150 MHz to be shared on a co-primary basis. That 150 MHz can be used only in the hub-to-subscriber direction, so the Commission is concerned that "some proposed LMDS systems would not be able to provide the full panoply of two-way services anticipated."<sup>5/</sup> Even though applications such as wireless cable and Internet access carry mostly hub-to-subscriber traffic, that reasoning still might justify allocating 150 MHz of 31 GHz spectrum to LMDS, thus giving it 1,000 MHz unencumbered, in addition to the 150 MHz co-primary. Indeed, Sierra supports that outcome. But nothing in the Notice explains the need to allocate another 150 MHz of 31 GHz spectrum to LMDS as well. For example, TI quotes a passage from the Notice that discusses consumer demand for LMDS services and concludes, "The proposed designation of 300 MHz of spectrum would ensure consumers access to new and competitive technologies."<sup>6/</sup> But nowhere does the Notice discuss why 150 MHz of additional spectrum would not give customers satisfactory access to these technologies. Even if there are inefficiencies in splitting operations between the 28 and 31 GHz bands, LMDS interests have not attempted to quantify them in terms of additional spectrum needed, and certainly not to justify spectrum beyond Sierra's proposal of 850/150 MHz unencumbered plus 150 MHz hub-to-subscriber.<sup>7/</sup> Consequently, while a Report and Order based on the present record might recite that LMDS needs the entire 31 GHz band, the decision could not rationally support that claim.

Of course TI wants as much spectrum as it can get for LMDS. But TI's speculations as to how it might use the 31 GHz band do not constitute a showing of need.<sup>8/</sup> TI does not demonstrate, or even state, that it cannot accommodate these operations at 28 GHz. To the contrary, TI's proposal to use the 31 GHz band for stand-alone mini-LMDS systems in "a university, medical center or business park"<sup>9/</sup> raises the disturbing possibility that TI is

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<sup>5/</sup> First Report and Order and Fourth Notice of Proposed Rulemaking Notice at ¶ 97 (released July 22, 1996) ("Notice").

<sup>6/</sup> TI Letter at 3 (quoting Notice at ¶ 100).

<sup>7/</sup> In any event, TI's proposed uses of 31 GHz for back-haul among LMDS hubs or stand-alone LMDS campus systems do not suffer from obvious inefficiencies of band-splitting. TI Letter at 4.

<sup>8/</sup> TI Letter at 4.

<sup>9/</sup> TI Letter at 4.

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now attempting to lever the spectrum shortfall at 28 GHz into a fundamental redesign of LMDS requiring more spectrum than previously contemplated. After all these years, TI cannot seriously justify an increased allocation by recasting the essentials of the service at the last minute. And TI's quotation from a filing by public TV representatives, requesting authority for LMDS licensees to sublease excess capacity, if anything suggests LMDS does *not* need a full 1,300 MHz of spectrum.<sup>10/</sup> For the Commission to allocate spectrum beyond LMDS's demonstrated needs, in derogation of the public interest in 31 GHz point-to-point operations, would be arbitrary and capricious.

In this connection Sierra trusts the Commission will overlook TI's assertion that to leave 150 MHz for point-to-point operations would be "at the expense of millions of dollars in deficit-reducing auction revenue."<sup>11/</sup> Giving consideration to any potential revenue from auctioning spectrum for LMDS would violate Section 309(j)(7)(A) of the Communications Act, which provides:

In making a decision pursuant to section 303(c) of this title to assign a band of frequencies to a use for which licenses or permits will be issued pursuant to this subsection [on competitive bidding], and in prescribing regulations pursuant to paragraph (4)(C) of this subsection, **the Commission may not base a finding of public interest, convenience, and necessity on the expectation of Federal revenues from the use of a system of competitive bidding** under this subsection.<sup>12/</sup>

## Public Interest in 31 GHz Point-to-Point Operations

Not surprisingly, TI and CellularVision disparage the public interest in 31 GHz point-to-point operations. Both allege a low level of use of the band and criticize spectrum efficiency. TI repeatedly accuses Sierra of "warehousing" spectrum.<sup>13/</sup>

Use of the 31 GHz band, like every other, depends heavily on the cost of

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<sup>10/</sup> TI Letter at 4.

<sup>11/</sup> TI Letter at 1.

<sup>12/</sup> 47 U.S.C. § 309(j)(7)(A) (emphasis added).

<sup>13/</sup> TI Letter at 1, 5.

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equipment. As a rule the cost of microwave equipment increases with frequency and decreases over time. The penetration of new technologies thus tends to resemble an "S" curve with slow penetration at first, followed by a rapid rise in penetration as marketing efforts take hold and the costs of equipment come down. It is only recently that equipment at 31 GHz became inexpensive enough to be available to the city, county, and state communications systems, hospitals, schools, and traffic control and monitoring systems that now account for more than 70% of the transmitters in the band. At the same time, however, as Sierra noted in its first-round comments, the rate of growth in the band is prodigious. Sierra, which accounts for the majority of the 31 GHz transmitters in use, is shipping 75% more equipment in 1996 than it did in 1995, and it expects to ship four times more equipment in 1997 than in 1996.<sup>14/</sup> In addition, the market for private network equipment continues to double steadily about every two years. This pattern of penetration is consistent with other new telecommunications technologies, including cellular. A rational public interest calculation cannot overlook demand in the form of rapid growth, especially a steep increase of the rate of growth.

Sierra has never disputed that the spectrum efficiency at 31 GHz could be improved -- but only at a cost that would price the equipment beyond those who need it most.<sup>15/</sup> CellularVision brushes aside the cost element,<sup>16/</sup> but of course it is critical to the public interest calculation. Just as there would be little public interest in an LMDS service that sits idle because consumers and businesses cannot afford it, so too the public interest in 31 GHz point-to-point technology depends critically on its accessibility to the cash-strapped, tax-supported local governmental entities that make up the majority of users. Although TI characterizes Sierra's claim that doubling and tripling the price of 31 GHz equipment would put it out of reach of most public safety agencies as being "without any support,"<sup>17/</sup> in fact Sierra has always been the major

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<sup>14/</sup> This is a conservative estimate based on Sierra's existing business with governmental entities and master contract relationships with its common carrier customers. But it does not take into account the chilling effect of the Notice in this proceeding, which has begun to take a toll on Sierra's sales.

<sup>15/</sup> Sierra presented the details of this calculation in a prior filing. Letter to Suzanne Toller (filed Sept. 10, 1996).

<sup>16/</sup> CellularVision Letter at 2-3.

<sup>17/</sup> TI Letter at 6.

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wholesale supplier to this market, and as such has good information on the relationship between price and demand.

Finally, TI's claims of "warehousing" are spurious. Warehousing is a form of speculation -- the practice of making spectrum unavailable in hopes its value will increase or to protect market share from competition. With respect to the first kind of warehousing, Sierra has no interest in seeing spectrum held out of use. Sierra's economic self-interest as an equipment manufacturer lies in seeing spectrum used, not withheld. Sierra's efforts to ensure that spectrum is available for the use of its customers is not "warehousing," any more than are TI's efforts to have spectrum allocated for the use of its own customers. Similar considerations apply to any claim that Sierra is attempting to protect market share. Sierra has demonstrated a rapidly growing demand for both public and private services in the 31 GHz band, and has no interest in preserving spectrum to protect any business or for other anticompetitive reasons. As a leading manufacturer whose products are helping to fuel the demand, Sierra obviously stands to benefit from it. Thus, Sierra's interest in fostering use of the band is the same as TI's interest in fostering the deployment and use of LMDS. Sierra is no more attempting to warehouse spectrum than TI is.

## **Conclusion**

A 150/150 MHz division of the 31 GHz band is a fair and rational resolution of this proceeding. This division gives LMDS the full 1,000 MHz of unencumbered spectrum justified by the record, plus another 150 MHz suitable for hub-to-subscriber use. LMDS interests have never demonstrated a need for

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more spectrum than that. This resolution also acknowledges the public interest in point-to-point operations. The Commission should adopt this division and move forward promptly with its LMDS auction plans.

Sincerely,



Mitchell Lazarus

cc (by hand delivery):

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